

leigh Salterton, Devonshire." By the Rev. P. B. Brodie, M.A., F.G.S.

The author notices some previous remarks upon these pebbles, which, in Warwickshire and elsewhere, either occur in the Trias or have been derived from it. To account for these, he supposed that there had been a more northerly extension of Silurian rocks than can now be detected in Central England. The Lickey quartzite has been supposed to have contributed some of these; but the author states that he has not found any one well-defined Llandovery species, but that the most characteristic are Lower Silurian. These pebbles are most abundant south of Birmingham, towards Warwick and Stratford-on-Avon. They agree lithologically with the Budleigh-Salterton pebbles; these, as it has been shown, are partly Lower Silurian, partly Devonian, partly Carboniferous. The author gives a list of species collected by him from the Warwickshire pebbles. Sixteen are present from the twenty-four Lower-Silurian forms found in Devonshire. Notwithstanding their identity, physical considerations forbid the supposition that they have been derived directly from that locality or Normandy; so that it is probable these Lower Silurian quartzite rocks once extended much further to the north.

BIBLIOGRAPHICAL NOTICES.

On the Structure and Affinities of the Genus Monticulipora and its Subgenera. By H. ALLEYNE NICHOLSON, M.D., D.Sc., F.R.S.E., F.L.S., Professor of Natural History in the University of St. Andrews. 8vo. Edinburgh & London: W. Blackwood & Sons, 1881.

THIS work is a further result of the continued palæontological researches of Prof. Nicholson, and although perhaps not so generally interesting as his previous volume on the Tabulate Corals, is not a less important contribution to the history of a difficult and variable group of Cœlenterata—the Monticuliporidæ, whose relations and affinities have of late years been the subject of investigation. In his previous work Prof. Nicholson only treated generally of *Monticulipora* and its immediate allies. The matter there given, greatly expanded and improved by more extended observations of his own and other authors', is incorporated in the present treatise.

The general history and literature of *Monticulipora* and the allied genera, including an analysis of the classification of Dybowski, is followed by a chapter on its comparative structure, in which the forms of the corallum, the differential structure of the walls of the corallites as compared with those in *Stenopora* and *Chætetes*, and the surface features are described; under the latter head are the "monticules" (circumscribed areas on the surface of the corallum, which are more or less elevated above the general level), from the presence of which the name of the genus is derived.

Another remarkable superficial feature is the "spiniform corallites," peculiar blunt spine-like structures placed in greater or less numbers round the calices; and these are regarded, for reasons assigned, not merely as appendages of the corallum, but as truly of the nature of peculiarly modified zooids or corallites—a view differing from that of Dybowski, who considered them of the same nature as the peculiar (intramural) canals which are found in various tabulate corals (see also Ann. & Mag. Nat. Hist. ser. 4, vol. xviii. p. 92). Besides these curious structures, microscopic examination brings out the important fact that the corallum of *Monticulipora* is *dimorphic*, consisting of two different sets of corallites, inhabited during life by two different sets of zooids; this is stated by the author to be analogous to the structure which Mr. Moseley has shown to exist in *Heliolites*, the interstitial tubes of which were previously regarded as vesicular cœnenchyma.

The third chapter treats of the development, affinities, and systematic position of *Monticulipora*, in which the author discusses and dissents from its Polyzoan affinities as advocated by Dr. Lindström; the resemblances and differences with *Heteropora* are compared, from which it is inferred "that the points of likeness between the two are by no means so weighty as the points of difference." The affinities of *Chætetes* and *Stenopora* are considered, and also the Helioporidæ.

After pointing out the strong resemblances between *Monticulipora* and its allies and various undoubted corals, principally among the Helioporidæ, Prof. Nicholson is inclined to regard the Monticuliporidæ as an ancient group of the Alcyonaria. With regard to the zoological position assigned to this group, it is evident, from the numerous references cited throughout the work, it was quite an unintentional oversight that the author did not notice that the *affinity* now adopted by him was proposed and clearly foreshadowed by Prof. Duncan ten years ago, in the third report on British fossil corals (Rep. Brit. Assoc. 1871, p. 135), where he places amongst the Alcyonaria *Chætetes*, *Monticulipora*, *Dania*, *Stellipora*, and *Labeclia*, and states that the last two genera, together with *Dekayia*, are subgenera of *Monticulipora*, and that *Dania* cannot be separated from *Chætetes*.

Prof. Nicholson also does not appear to have referred to the valuable work of Milne-Edwards, 'Histoire des Coralliaires,' in which much information is given with regard to the so-called Tabulata, under the Chætetinæ (vol. iii. p. 269).

With regard to the subdivisions of the group, Prof. Nicholson proposes to arrange under the family Monticuliporidæ the following genera—*Fistulipora*, *Constellaria*, *Dekayia*, *Monticulipora*—the first three groups, for practical convenience, being retained as distinct *genera*, "in spite of the fact that they have no theoretic claim to such a rank." The last genus is again divided into five subgenera, *Heterotrypa*, *Diplotrypa*, *Monotrypa*, *Prasopora*, *Peronopora*; the general characters and detailed descriptions of the illustrative species of these subgenera occupy the last five chapters. The majority of

the species selected for illustration are from the Silurian rocks of America, two are from Europe, and about four from Britain.

The series of well-executed woodcuts and plates illustrating the microscopic structure, copied from sections and drawings prepared by the author himself, together with the clear and elaborate descriptions, will render this work a valuable guide for future observers on a puzzling group of Palæozoic corals; for, as Prof. Nicholson observes, the subject is far from exhausted. The main object has been to record the characters of a number of partially known forms rather than to describe new species—a laudable object in the present state of Palæontology, where in certain groups, such as that now under consideration, the identification and recurrence of species in particular horizons are chiefly based on the characters of external form and aspect.

Note-Book of an Amateur Geologist. By J. E. LEE, F.G.S., F.S.A.
Svo. London: Longmans, Green, and Co., 1881.

AMONG the various contributions to geological literature, scarcely any having a similar object and tendency to the above work have appeared, excepting the 'Sections and Views illustrative of Geological Phenomena,' by De la Beche, published in 1830.

The facts collected in this volume embody the results of visits to some of the more interesting geological localities in this country and on the continent during the last fifty years; and the sketches and diagrams made on the spot are now given in more than two hundred plates with ninety pages of descriptive letterpress. The author has endeavoured to make the description of the sections and sketches as brief as possible—in fact, to let the sketches speak for themselves, so that any one with a geological eye will at once see why the section or sketch was drawn.

Among the various subjects illustrated we may notice the Lias and Trap rocks of Portrush, the chalk and basalt of the Giant's Causeway, the extinct volcanos and crater-lakes of the Eifel, the granite rocks of the Land's End, the parallel roads of Glenroy, various sketches of the Silurian, Devonian, and Carboniferous rocks, the moraines and glaciers of the Alps, the scenery and rocks of the Auvergne, the physical and geological features around Rome and Naples, the geological structure of parts of Sweden and Denmark, the contours produced by the weathering of different kinds of rocks.

Considering the range of time through which the work extends, one or two of the earlier descriptions might now perhaps be slightly modified and improved; among the later ones a further and more detailed account of the Faxoe beds would have been interesting, in showing the nature and relation of the strata and their fossils, of the Stevensklint and Faxoe limestones to the underlying white chalk with flints.

There appears to be some confusion about the crustacean figured on plate 204, from the Lower Greensand of Atherfield, and referred to *Mecochirus Pearcei*, M'Coy; the latter species is from the Oxford

Clay near Chippenham, and is described in the Ann. & Mag. Nat. Hist. (ser. 2, vol. iv. p. 172), having been previously named by Mr. Pearce *Ammonicolax longimanus*, and considered by him to belong to the hermit-crabs. The specimen figured on plate 204 is the *Meyeria vectensis*, Bell (Pal. Soc. 1862, pl. x.), the *Meyeria magna*, Mc'Coy. Without any pretensions to be a scientific treatise, the 'Note-Book of an Amateur Geologist' must be regarded as a useful, if not a necessary, appendage to other geological works, in affording a series of accurate sketches of the more interesting geological facts and phenomena collected by the author during many years of travel, and which, with the accompanying descriptive notes, may be considered worthy of being permanently recorded.

MISCELLANEOUS.

On the Embryogeny of the Ascidians of the Genus Lithonephria.

By M. A. GIARD.

The Ascidian that forms the subject of this note is very common at Wimereux on the lower surface of stones. It is very nearly allied to *Lithonephria complanata*, Alder and Hancock, and *L. decipiens*, Giard, but differs from the latter in its tadpole, which never presents prolongations similar to those of the embryos of the *Molgulae*. I believe it to be identical with *L. eugyranda* (*Ctenicella*), Lac. Duth. The study of its embryogeny is facilitated by a physiological peculiarity which is rare in the simple Ascidians: the ova are incubated in the progenitive organism; so that we find a great number of different stages of evolution in a single individual.

I have resumed upon this species the investigation of the singular productions which issue from the ovum before the segmentation, and have received the name of *cells of the green layer*, or *granulosa-cells*. These observations absolutely confirm those I made some years ago upon the ovarian ova of *Molgula socialis* and several other simple Ascidians*.

The *granulosa-cells*, without any possible doubt, have an origin exterior to the ovule; they have emigrated from the follicle, or even from some other part of the ovary, and penetrated very early into the vitellus; they are by no means derived from the germinal vesicle, which takes no part in this process. The migratory cells bury themselves deeply in the vitellus, and may even apply themselves to the germinal vesicle; they are always easily discovered by means of very dilute acetic acid. These cells soon become inflated, present a distinct wall, and their contents divide into two, four, and six protoplasmic masses; then the wall disappears, and these masses are by degrees expelled at the surface of the ovum at the moment when, the latter being mature, we see the contractions of the vitellus commence. The action of acids forwards the expulsion of

* Association Française, Montpellier, 1879, p. 768.